

Land Swap: Does a Temporary Pasture Increase Pests?



Highlights:

- Our Land Swap turned a horticulture field into a temporary pasture to increase soil health.
- Wireworms are a horticultural pest, and their population could be increased by the temporary pasture.
- We did not find an increase in wireworms between the pastures and fields that remained in horticulture production.

Dec 18, 2025

What is a Land Swap?

As part of Living – Lab Nova Scotia we are testing a land swap as a beneficial management practice (BMP). This creates a partnership between a horticulture producer and a livestock producer to install a temporary pasture on a horticulture field.

Horticulture fields tend to have lower soil carbon and overall lower soil health compared to pastures. Horticulture production typically includes a lot of soil disturbance, exposed soil, and little crop residue returned to the soil. Pastures typically have higher soil carbon due to continuous plant cover, living roots, and carbon cycling through grazing.



Sheep grazing at one of our land swap sites.

While this practice has the potential to increase the field's soil health, a concern raised by the horticulture producers was an increase in wireworms. Wireworms are the larval stage of click beetles. Larvae can feed on transplants and damage the root system. As larvae get larger in the fall, they can cause damage to root crops such as carrots. Adult beetles tend to lay eggs in perennial forages.

To address these concerns, we monitored differences in wireworm and click beetle populations in our temporary pasture for the land swap and a nearby paired field that remained in horticulture production.

How we assessed wireworms

Wireworms were collected by bait sampling. Across fields holes were dug in a random pattern and a piece of potato was placed in the hole and covered. After 7-10 days the potatoes were retrieved. Once in the lab potato pieces were examined for holes and the number of holes was used as a comparative measure of population size. Wireworms were baited in the spring and fall, when soil was cool enough that wireworms would be active. When soil is too dry and warm wireworms move deeper into the soil.



Setting potato bait traps for wireworms (left) and analyzing potatoes for wireworm damage in the lab.



Pheromone traps being installed for click beetles.

We also sampled the adult click beetles using pheromone traps. A pheromone is a chemical that impacts animal behaviour. In this case, we used pheromones that would attract the click beetles to the traps. A pitfall trap was placed in the field (a cup with the rim level to the soil so insects crawling across the soil will fall in) and the pheromone was placed in a lid that covered the cup. After 7-10 days the contents of the cups were collected and the trap replaced. This happened during the spring when adult click beetles emerge. The amount of click beetles collected was used to compare populations between the pasture fields and fields that remained business-as-usual (horticulture production).

Did our temporary pasture increase wireworms?

Over three years (2023-2025) there was no significant difference between the amount of click beetles in our temporary pasture and the business-as-usual horticulture fields (Figure 1a). Looking at the trend over the three years, there was no increase from the start of the pasture until the final year (Figure 1b).

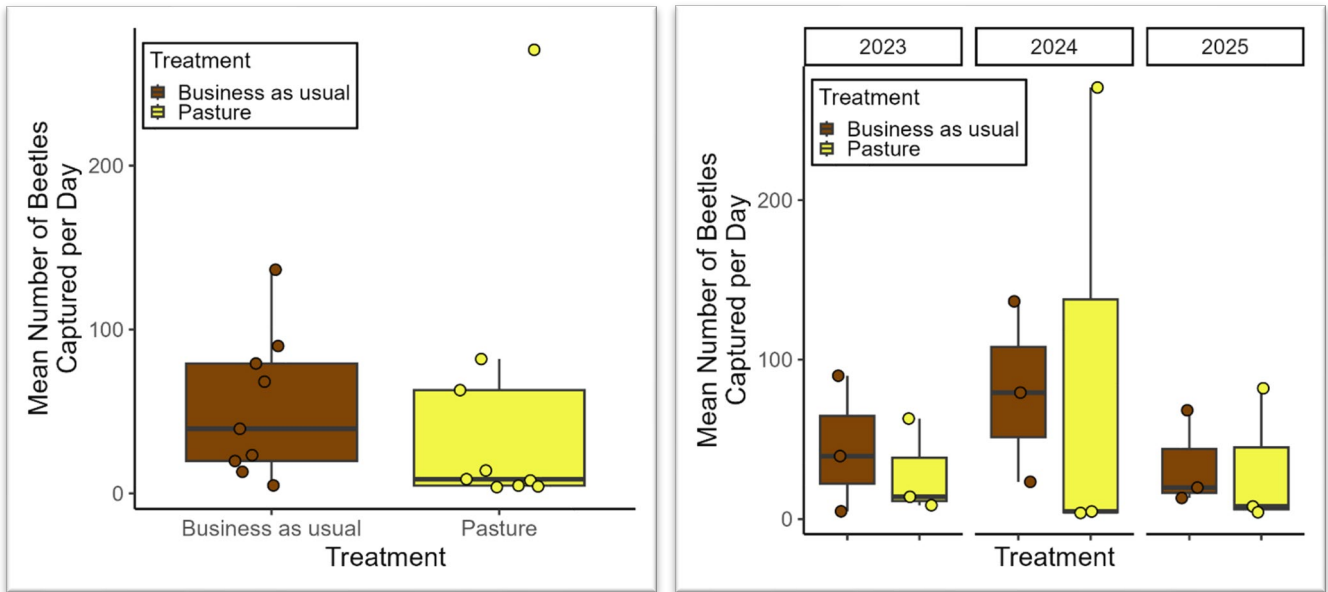


Figure 1a). Average amounts of click beetles collected in pheromone traps from 2023-2025. B) Average amount of click beetles collected by year.

There was similar data for wireworms, with no significant differences in number of holes in the bait traps between the pasture and the business-as-usual fields over the three years of pasture (Figure 2a). The trend over time showed a slight decrease in wireworms from the start of the pasture until the end, but a similar trend was seen in the business-as-usual fields as well, so it is likely not caused by the installation of the pasture (Figure 2b).

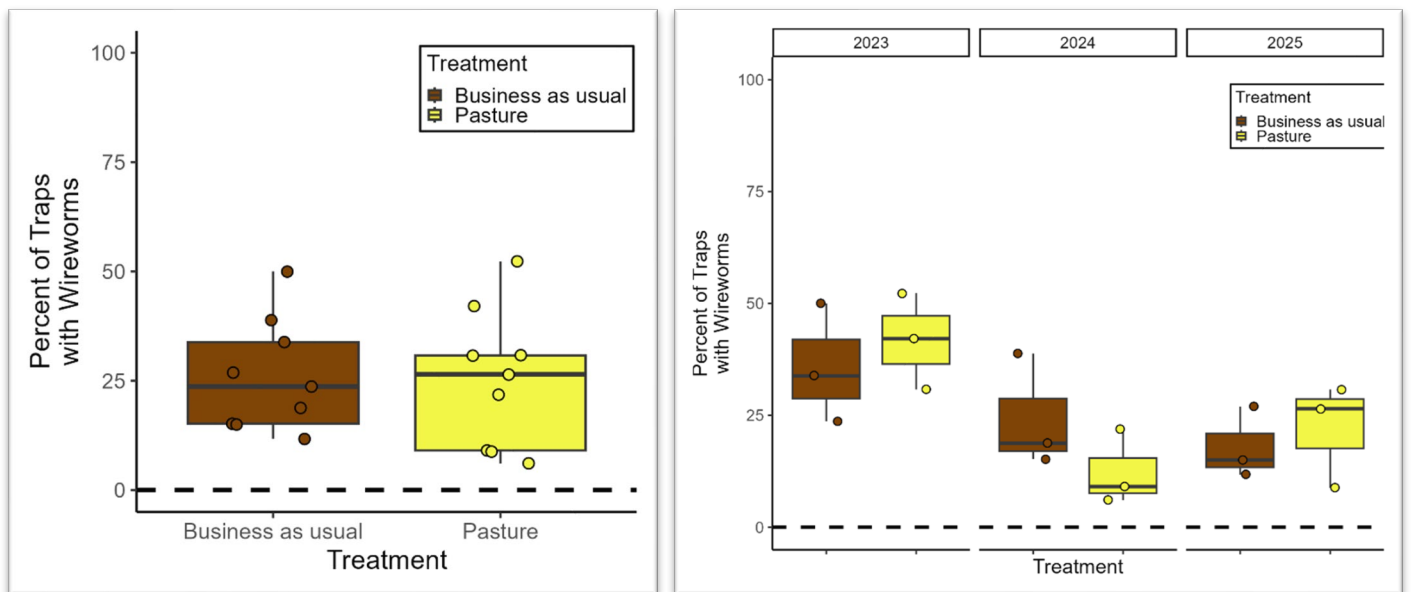


Figure 2a). Amounts of wireworm damage (%) in potato baits from 2023-2025. B) Amount of damage (%) by year.

How Can This Research Be Used?

The three-year pasture we installed on a horticulture field to facilitate a land swap did not increase the populations of wireworms. Therefore, the model of land swapping is unlikely to lead to unwanted pests for the horticulture crops once the land swap is complete.

Producers who are looking to either improve their soil health or increase the amount of land they have to graze, should consider this option.



Want to Learn More?



For any questions on this research contact Alexandre Loureiro, our Living Lab Coordinator, at aloureiro@nsfa-fane.ca.

Find out more about the Living Lab project at nsfa-fane.ca/livinglabs. Here you can find our other research briefs and additional information resources.

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